06 June, 2001

MODIS sensor Working Group (MsWG) Summary

Attendance: Bill Barnes, Bob Evans, Chris Moeller, Eric Vermote, Gary Toller, Jack Xiong, Mike Roberto, Roger Drake, Zhengming Wan, Gwyn Fireman

Scheduled Items

SMIR Xtalk Algorithm

Points clarified:

- Coefficients were derived from SRCA spatial tests with 5 different phase delays, cross-correlating sending and receiving band signals.
- SRCA illuminates a 1 by 10 slit, which does not fully simulate Earth illumination.
- The current weighting function is 0 for bad detectors, 1 otherwise.
- MCST has derived RSB crosstalk coefficients. L1B code changes are in the works; it will be more than a week before L1B test runs are complete.
- MCST will derive MWIR band crosstalk coefficients.
- The correction coefficients are expressed as a function of dn to the second order. The crosstalk correction equation appears to be a third-order equation in dn; however the third-order correction term is very small.
- Extrapolation of Xtalk correction is not problematic because
- SWIR band calibration levels cover entire dynamic range
- MWIR high order coefficients are extremely small
  - May set high-order coefficients to zero.
- MCST plans to test RSB crosstalk correction by
- Applying crosstalk coefficients to SRCA test data,
- Rederiving m1 values with crosstalk correction applied,
- Running real scene validation images through L1B "research" version, applying new m1 values and crosstalk correction. (Vermote will identify granules for SWIR, and Moeller will identify granules with ER-2 underflights for MWIR).
- Examining the resulting granules for striping and subframe differences.
- Planned tests will not verify correctness of radiometry.
- The Land Team will help to assess test results.

Action 0106-01: Document crosstalk correction derivation and test methods, to include a cartoon of sending and receiving band interactions.

Action 0106-02: Generate a test version of L1B code implementing RSB and TEB crosstalk corrections.

Action 0106-03: Derive MWIR band crosstalk coefficients.

Action 0106-04: Run tests to verify crosstalk coefficients; send resulting granules to Land Team.

Terra MODIS SSR anomaly update

- SSR problem areas are being avoided, starting May 25; data received is now normal.
- The anomaly affected data from May 20 25; EDOS is working to recover as much data as possible.
- Since SSR has less capacity, TDRSS contacts are closely spaced. There is the potential for data loss when the Shuttle is up; during those times we may adjust the day/night rate data ratio to minimize impact.

Aqua FM1 B1/B2 issue update

Roger Drake reports for SBRS:

- Latest test results show FM-1 Bands 1 and 2 have come back in family! The change represents the largest percentage jump in FM-1 test history. Next test is in two weeks.
- Need to review SRCA lamp usage, as these are limited-lifetime components.
- SBRS is meeting with focal plane people to discuss diodes, electronics voltages and currents. Conversion of relevant DNs to engineering units is in process. Focal plane investigation will continue.
- Trending PFM radiometric response, but there is less SRCA-spatial data. No anomalies are seen in Band 2 with respect to NIR Bands, using the 1-W lamp.

Around the Table

MCST:

Work in Progress:

- Monitoring m1 LUT trend during 1-year consistent processing. If two significant deviations from the trend are in the same direction, we will notify the MsWG.
- Alternate DN_SV_avg subtraction test showed no real improvement over the current implementation, so we will not implement the alternate technique.
- No change in status of MISR test.
- SBRS FPA group is waiting on engineering unit conversion for LWIR analysis.

Moeller:

Suggests that we choose test dates corresponding to ER-2 underflights for crosstalk correction verification. Currently MCST is using a granule suggested by Vermote; we will also process data sets during times suggested by Moeller.
Action 0106-05: Apply crosstalk correction to data sets specified by Vermote and Moeller.

Moeller will examine Band 25 and 26 granules tracking surface features. Do coefficients suggest that Band 5 is the largest crosstalk contributor to Band 26?
Action 0106-06: Send Xtalk coefficients and conversion factors to Moeller when final.

Q: Is there any new info from SBRS regarding Band 34 cross-track striping wrt 1/f noise?
A: Drake talked with SBRS's detector group about PC & LW band changes. Any increase in 1/f noise would indicate changes in detectors; increase in white noise would implicate electronics. Band 34 channels 3 through 6 (SBRS) have been noisier since the outgas; analysis of scan edge indicates 1/f noise. MCST has not seen any substantial change in noise on-orbit. Moeller will look for any noise in pre-outgas data.

Evans:
Night SST and SST4 products are in good agreement and are consistent with AVHRR/Pathfinder. Next step is night cloud retrieval. New global SST charts are available on the ocean group's web page.

Biggar:
Getting ready for a field campaign at Fairmont.

Wan:
Q: Are there plans to implement the crosstalk correction in reprocessing?
A: Not at this time, due to requirements of consistent-year processing. If the crosstalk correction results in substantial product improvement, the Science Team will be consulted and will make the decision.

Drake:
Temperature telemetry for the SMIR heater test shows that the heater never reached a stable temperature. A few orbits needed to attain stability.

SBRS has been examining the SDSM as-flown drawing sets.

- Optical design memos show the SDSM square aperture is 0.625" ± 0.002" on each side (previously reported as 0.620").
- SBRS has the flight spare SDSM aperture, expected to be precisely identical to the on-orbit model.
- If optics lab tests show that tilt and area differences are responsible for observed SDSM hole effects, they may recommend that a new SDSM screen be installed in FM-1 (Aqua MODIS).

Action 0106-07: SBRS will send SDSM as-flown drawings to MCST.

compiled by G. Fireman 12 June, 2001